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10/541,668	12/27/2005	Yoav Bar-Yaakov	0-05-109	4122

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EXAMINER

ARNBERG, MEGAN C

ART UNIT	PAPER NUMBER
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1796

MAIL DATE	DELIVERY MODE
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12/11/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,668	Applicant(s) BAR-YAAKOV ET AL.	
	Examiner Megan Arnberg	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/18/2006; 07/07/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

It should be noted that JP 2001-310990 listed on the Information Disclosure Statement is crossed out since the Office Action cites it and the translation below. The Examiner has considered both the abstract and the entire document translated into English and has listed it as a reference on PTO-892.

Claim Objections

Claim 14 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 14 is dependent on claim 13, which is a method for the preparation of the composition involving reacting low molecular weight brominated epoxide, tetrabromobisphenol-A and tribromophenol in the presence of a catalyst. Claim 14 permits all of the tribromophenol to be replaced by tribromophenyglycidyl ether. A dependent claim must include every limitation of the claim on which it depends and, as written, it is possible that claim 14 does not include the tribromophenol limitation. See MPEP 608.01 (n) II. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-15 recite the limitations "formula (I), formula (II) and formula (III)" in claim 1 second and third lines, claim 4 last three lines, claim 10 lines 7 and 8, claim 13 lines 4 and 5. There is insufficient antecedent basis for this limitation in the claim. For the purpose of further examination the formulas are taken to be the formulas (I), (II) and (III) given in the written description of the application. However, applicant is required to correct the claims to include these structures, particularly in the independent claims 1, 10 and 13.

Claims 1-15 are further rejected because it is unclear which end groups are described in the claims (claim 1 line 4, claim 2 line 2, claim 10 lines 9 and 11, and claim 13 lines 5 and 6). There are three different structures to which the term "end groups" could refer, either formula (I), formula (II) or formula (III). For the purpose of further examination it is taken to be the end groups of the resulting mixture of formula (I), formula (II) and formula (III).

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent

protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 3 recites the broad recitation organic compounds, and the claim also recites solvents which is the narrower statement of the range/limitation.

Claim 3 recites the limitation "organic compounds" in the second line. There is insufficient antecedent basis for this limitation in the claim. For the purpose of further examination it is taken to be the organic solvents as stated in claim 1.

Claim Rejections - 35 USC § 102

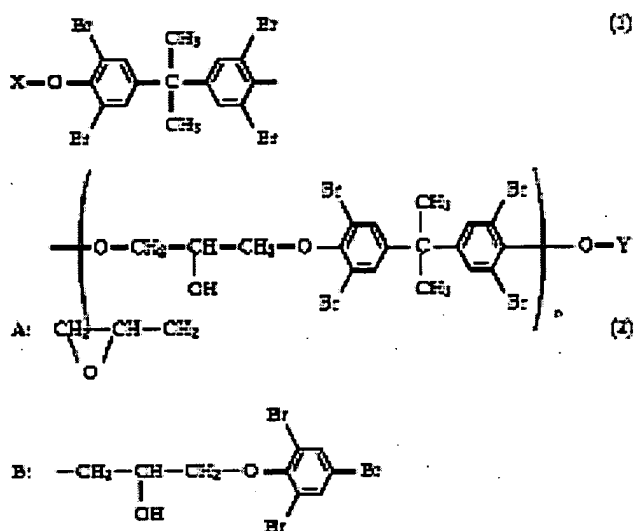
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (U.S. Pat. 5,837,799).

Regarding claims 1, 2 and 3: Chen et al. teaches a flame retardant for polymeric compositions (abstract) comprising a mixture of the molecules of the formula:



where X and Y can be group A or

group B (cols. 2 and 3), which is the instant formula (I) if X and Y are A, the instant formula (II) if X and Y are B, and the instant formula (III) if one of X or Y is A and the other is B. A mixture of these compounds is taught with 3.9% glycidyl end groups and 96.1% tribromophenyl-oxo-2-hydroxypropyl groups, which overlap the claimed ranges (Table 1 Reference example 4). This calculation is based on the amounts of disclosed X=Y=A, X=Y=B, and X=A, Y=B. It is not indicated that there is any free tribromophenol content in the composition and 0% is less than 0.1%. Reference example 4 is made in the same way as Example 2 (col. 6 lines 10-40), which uses no solvent.

Regarding claim 4: In Reference example 4, the disclosed fire retardant X=Y=A corresponds to the claimed formula (I), X=A, Y=B corresponds to claimed formula (III)

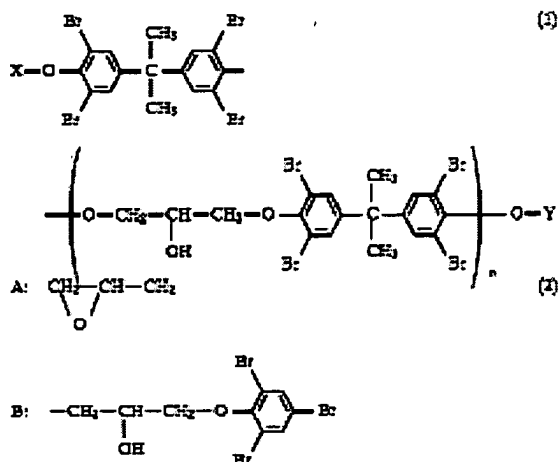
and $X=Y=B$ corresponds to claimed formula (II) (see rejection of claim 1 above). There is 93.5% of formula (II)/ $X=Y=B$, 5.2% of formula (III)/ $X=A$, $Y=B$, and 1.3% of formula (I)/ $X=Y=A$, which overlaps the claimed ranges.

Regarding claims 5 and 6: Chen et al. discloses the formula shown above in the rejection of claim 1 with $n = 0-30$ (col. 4 lines 57-63). With $n = 30$, the calculated molecular weight of the fire retardant is 18,600 to 19,300 depending on the quantity of each end group. This overlaps the claimed ranges.

Regarding claims 7, 8 and 9: While Chen et al. does not directly teach that the acid number is less than 1 or 0.5 mg KOH/g or the epoxy equivalent is more than 10,000, since all of the components are present in the composition it is inherent that the composition would have these properties. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with these properties.

Claims 10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (U.S. Pat. 5,837,799).

Regarding claim 10: Chen et al. teaches a flame retardant for polymeric compositions (abstract) comprising a mixture of the molecules of the formula:

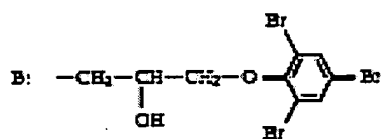
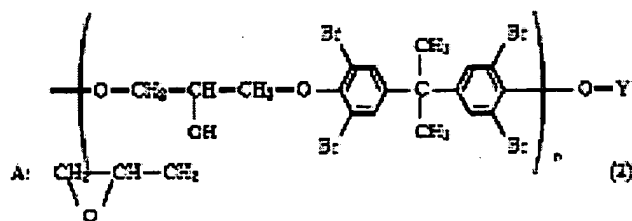


where X and Y can be group A or group

B (cols. 2 and 3), which is the instant formula (I) if X and Y are A, the instant formula (II) if X and Y are B, and the instant formula (III) if one of X or Y is A and the other is B. A mixture of these compounds is taught with 3.9% glycidyl end groups and 96.1% tribromophenyl-oxo-2-hydroxypropyl groups, which overlap the claimed ranges (Table 1 Reference example 4). This calculation is based on the amounts of disclosed X=Y=A, X=Y=B, and X=A, Y=B. It is not indicated that there is any free tribromophenol content in the composition and 0% is less than 0.1%. Reference example 4 is made in the same way as Example 2 (col. 6 lines 10-40), which uses no solvent. The composition also can comprise PET/polyethylene terephthalate, PBT/polybutylene terephthalate, polycarbonate resin or polyamide resin (col. 5 lines 7-15).

Regarding claim 12: Also disclosed are filler, lubricant and pigments (col. 5 lines 22-27).

Claims 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (U.S. Pat. 5,837,799).

$$\begin{array}{c} \text{Br} \\ | \\ \text{X}-\text{O}-\text{C}_6\text{H}_3-\text{C}(\text{CH}_3)_2-\text{C}_6\text{H}_3-\text{Br} \\ | \\ \text{Br} \end{array} \quad (2)$$


group B (cols. 2 and 3), which is the instant formula (I) if X and Y are A, the instant formula (II) if X and Y are B, and the instant formula (III) if one of X or Y is A and the other is B. A mixture of these compounds is taught with 3.9% glycidyl end groups and 96.1% tribromophenyl-oxo-2-hydroxypropyl groups, which overlap the claimed ranges (Table 1 Reference example 4). This calculation is based on the amounts of disclosed X=Y=A, X=Y=B, and X=A, Y=B. It is not indicated that there is any free tribromophenol content in the composition and 0% is less than 0.1%. The method comprises the steps of reacting low molecular weight brominated epoxide/tetrabromo bisphenol A type epoxy resin with tetrabromobisphenol-A/TBA and tribromophenol/TBP in the presence of a catalyst (col. 3 lines 48-52).

Regarding claim 14: Chen et al. teaches a method comprising reacting low molecular weight brominated epoxide/tetrabromo bisphenol A type epoxy resin with

tribromophenol/TBP and tribromo phenyl glycidyl ether in the presence of a catalyst
(col. 4 lines 46-56).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. Pat. 5,837,799) as applied to claim 10 above in view of Chisholm et al. (US 2001/0009944).

Chen et al. sets forth the basic claimed composition as set forth above. Not disclosed is a hindered phenol antioxidant. However, Chisholm et al. teaches a

polyethylene terephthalate or polybutylene terephthalate (para. 31) based resin comprising brominated polyepoxide flame retardants (para. 47) with a hindered phenol antioxidant (Table 1). Chen et al. and Chisholm et al. are combinable because they are both concerned with the same field of endeavor, namely brominated epoxy flame retardants in PET or PBT resin compositions. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the hindered phenol antioxidant of Chisholm et al. with the composition of Chen et al. and would have been motivated to do so for such desirable properties as radical chain transfer inhibition.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. Pat. 5,837,799) as applied to claim 13 above when taken with Nantaku et al. (JP 2001-310990). Citations to the Japanese document refer to the English translation of the document.

Chen et al. teaches the basic claimed method as set forth above. Also, no solvent is listed by Chen et al. Not disclosed is the temperature of the reaction being between 100 and 250 °C. However, the experimental modification of this prior art in order to ascertain optimum operating conditions fails to render applicants' claims patentable in the absence of unexpected results. See *In re Aller*, 105 USPQ 233 and MPEP 2144.05. At the time of the invention a person having ordinary skill in the art would have found it obvious to optimize the temperature of reaction and would have been motivated to do so for such desirable properties as reducing generation of corrosive gas as evidenced by Nantaku et al. (pg. 3 para. 6). A prima facie case of

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obviousness may be rebutted, however, where the results of the optimizing variable, which is known to be result-effective, are unexpectedly good. See *In re Boesch and Slaney*, 205 USPQ 215.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan Arnberg whose telephone number is (571) 270-3292. The examiner can normally be reached on Monday - Friday 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Megan Arnberg
November 27, 2007

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